ECONOMIC IMPACT OF THE U.S. DEPARTMENT OF DEFENSE IN SAN ANTONIO 2006

Prepared for:

Military Transformation Task Force and the Office of Military Affairs

Study Conducted by:

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Executive Summary

The military has long had a significant presence in San Antonio. For example, the first military flight took place at Brooks Air Force Base; the Air Intelligence Agency is located at Lackland Air Force Base; Brooke Army Medical Center is the leading treatment center for burn victims in the military, and Fort Sam Houston is the home of Army medicine, among many other major missions present in San Antonio. Economically, it is believed that the military and Department of Defense (DoD) activities have a substantial impact on the local economy. It is the purpose of this study to provide an estimate of the measure of this economic impact.

To measure this impact, we go beyond just measuring the impact of the military installations. We include the impact of all DoD contracting activity to include contracts received by local private defense contractors, General Purchase Card activity, and military retirees and their beneficiaries. The impacts only include the effects of local DoD spending, and leakage is also considered. Local impacts on employment and earnings are also estimated. Thus, this is a fairly comprehensive analysis of the impact of DoD activities in San Antonio.

Overall, the DoD registers an impact estimated at $13.3 billion in 2006. This economic activity created earnings of about $9.4 billion and employment of $195,075. Multiplier effects are included in all of these estimates.

The economic impact of the Base Realignment and Closure (BRAC) activity was also estimated. With an additional $2.1 billion in military construction scheduled before September 2011 and over 4,886 net new jobs expected to be relocated to San Antonio, the impact is quite substantial. The economic impact from BRAC is projected to be about $5.7 billion resulting in additional earnings of $2.2 billion.

Introduction

The military has had a strong presence in San Antonio for a long time. It has played a key role in the city's history and the development of the local economy. This research focuses on the impact of the military and the Department of Defense activities on the local San Antonio metropolitan area economy. Of course, there is the standard economic impact of having military installations in your community and the stability it lends to the local economy. For instance, Keith Phillips showed in a 2004 study that the government sector has a beta value 0.38, indicating that "the industry reduces overall volatility" (p. 5).[2] This includes all government activities, but the military is certainly a part of this.

Beyond the standard impact of the military installations in the community, the military and the Department of Defense registers a substantial impact on the local economy in other ways. Since many of the military missions in San Antonio are focused in the area of information technology or intelligence and health care, the workers in these areas leave the military with a

[2] Keith R. Phillips and Kristen T. Hamden, "Steady-as-She-Goes? An Analysis of the San Antonio Business Cycle," Federal Reserve Bank of Dallas *Vista: South Texas Economic Trends and Issues*, Winter 2004, pp. 1-6. The paper can be found at: http://dallasfed.org/research/vista/vista0402.pdf.

strong skill base. Fortunately, some of these workers assimilate into the San Antonio workforce or indulge their entrepreneurial spirits and create their own successful companies. It is common for these companies to be defense contractors themselves, adding to the base of companies in San Antonio who derive a portion of their business from DoD contracts.

Lastly, the impact of the DoD in San Antonio extends even further beyond the active duty of the military personnel into their retirement. Many active duty personnel who finish their careers in San Antonio decide to stay in San Antonio into their retirement, and based on anecdotal evidence, some people who just spent time in San Antonio for their basic training or brief periods on a mission decide to come back to San Antonio for their retirement. This yields sizeable benefits to the San Antonio, as not only do many of these people re-engage in the San Antonio workforce, but they also receive retirement benefits and other payments related to their military duty.

This research has sought to capture many of the aforementioned impacts of the DoD on the San Antonio economy. Thus, it extends beyond just the impact of the military installations in San Antonio. The impacts are measured for the year 2006 as that is the most recent year for which complete data is available. The rest of the paper will discuss the data used, methodologies, and conclude with the results.

Data

The data used for this analysis were for the year 2006, which is the most current available. In a couple of instances, the most current data available was for 2005, and in these cases, the numbers were adjusted to 2006 dollars or projected to 2006.

Contracting and Personnel Data

Primary data for this study came from the Department of Defense (DoD). From the Statistical Information Analysis Division within the Defense Manpower Data Center located in the Office of the Undersecretary of Defense for Acquisition, data on the DoD contracts in San Antonio and several reports on personnel statistics were used to estimate the impact from DoD contracting in San Antonio and DoD employment. The reports and data on contracting and personnel information can be found at www.siadapp.dmdc.osd.mil.

The contracting database contains records of every transaction in the United States made through the DoD contracting process. The database contained over one million records which was filtered for whether work was done in San Antonio or if the acquisition process went through an office in San Antonio indicating that the management offices were locally based. The database contained about 40 fields of data. The relevant fields for this study are:

- Place of work
- Contractor office (where contract was processed)
- Contracting office (where contract initially written from)
- Dollar amount of the contract
- NAICS code at the six-digit level
- Product service code

The database includes contracting offices of all DoD fighting forces and Civil Works, Defense Logistics, and other defense agencies. Contracts must go through a rigorous bidding process, specification is stringent, and in some cases like petroleum, medicine, or ammunition, stock must be standardized. Value of contracts is generally greater than $2,500 and purchasing is most commonly centralized and physically redistributed to installation operations or the administrative process is pooled and installations may be free to choose from local vendors and the physical transportation of goods is more like a direct purchase.

From the same aforementioned data source, personnel statistics on employment by installation, metropolitan statistical area, and county, income, and proportion of reservists to enlisted military were obtained for this study.

General Purchase Card Data

General Purchase Card (GPC) data was obtained through a Freedom of Information Act request to individual installation procurement offices. Data was received from Lackland AFB and Randolph AFB. The database contained individual transaction records with expenditure categories broken out by Merchant Classification Code. A Merchant Classification Code is used by the banking industry to categorize transactions made with the Purchase Card by industry based on where the goods or services were purchased. They are somewhat similar to the NAICS codes. General Purchase Cards (GPC) are held by the local installations and they have discretion to purchase goods and services within guidelines but there is policy that favors "Buy Local". Purchases are generally less than $2,500 and there is more of a utilization towards services than goods.

Spending Data

The Consumer Expenditure Survey (CES) from Bureau of Labor Statistics (BLS) was used to derive spending patterns for retirees. The CES data are collected from interview and diary surveys and provide information on the buying habits of American consumers. The data include information on expenditures, income, age, consumer unit (families and single consumers) size, and various socioeconomic statistics. The most recent data available is for 2005.

Additionally, a non-published report on spending patterns by armed forces personnel was obtained through BLS with special permission from the DoD. This report was commissioned by the DoD and data was captured using the same process as the Consumer Expenditure Survey. Information on mortgage costs and real estate capital improvements was incomplete, so the data were supplemented with data from the American Housing Survey from the U.S. Census Bureau.

Retiree Data

Data on the number of military retirees receiving retirements and the amount of those payments was provided by the DoD Office of the Actuary through their annual report: "Fiscal Year 2006 DoD Statistical Report on the Military Retirement System." The data used from this report were pulled from the tables: "MilitaryPersonnel Receiving and Not Receiving Pay from DoD as of September 30, 2006" (pp. 34-47) and "Military Survivors Receiving Payments Under RSFPP or Survivor Benefit Plan as of September 30, 2006" (pp. 203-221). This data was

available by three-digit zip code. Pendulum Management received the same data for 2006 by five-digit zip code, which allowed for an accurate accumulation of the data into the San Antonio metropolitan area. The metropolitan area data were ultimately used in this analysis.

Multipliers

U.S. Bureau of Economic Analysis (BEA) RIMS II multipliers were used in this study. Using these multipliers requires that the spending activity be converted from purchaser prices to producer prices. To do this, conversion factors from the BEA were used. These factors are derived by BEA using the National Income and Product Accounts (NIPA) and are standard across all metropolitan areas.

Methodology

Measurement of Employment Impact

Employment in 2006 at Lackland AFB, Randolph AFB, and Fort Sam Houston was provided by the installations and used in this study. In order to estimate the military and related civilian employment in San Antonio, data was obtained for such employment from 1996 through 2005 from the DoD Statistical Information Analysis Division. Regression analysis was applied to this data to derive the employment for 2006. These estimates were checked against the employment numbers provided by the installations and adjusted accordingly. Estimates for Lackland, Randolph, and Fort Sam were also estimated as a check on the accuracy of the methodology. Based on this, the estimates derived from the regression analysis showed that the employment numbers provided by the installations were slightly higher. In order to adjust for these differences, the ratio of the total reported employment at the three installations divided by the total estimated employment at the same installations was calculated. This ratio was then multiplied by the estimated employment for the other military facilities.

Spendable Income

Spendable income[3] is defined as base pay plus cash benefits minus taxes for military personnel. For civilian personnel, it is defined as wages and salaries minus taxes, and for retirees, it is defined as the sum of their DoD-related transfer payments. For the military and civilian personnel, spendable income was derived from data provided by the DoD Statistical Information Analysis Division. Spendable income for retirees and their beneficiaries was estimated from data provided by the DoD Office of the Actuary. These estimates were validated against the BLS Consumer Expenditure Surveys and information provided by the U.S. Government Accountability Office.[4]

Estimates of Expenditures

Total spendable income was calculated. Military personnel expenditure patterns are differentiated by whether they live on or off the base or post using the number provided by

[3] Spendable income is similar to disposable income. We use the term "spendable income" to distinguish it from disposable income which can include income from other sources. However, spendable income is only derived from military employment.

[4] U.S. Government Accountability Office. "Military Personnel: DOD Needs to Improve the Transparency and Reassess the Reasonableness, Appropriateness, Affordability, and Sustainability of Its Military Compensation System." July 2005.

Lackland, Randolph, and Fort Sam Houston, the presentage of personnel living on and off base or post was estimated. Using the data from the BLS table Armed Forces: Average Annual Expenditures and Characteristics, Consumer Expenditure Survey, 2004-2006, ratios of amount spent to total wages by category expenditure were calculated to estimate the spending patterns of military and civilian personnel. These ratios were then multiplied by spendable income to obtain the amount spent in each category. The data used to calculate the ratios is for the United States, so we are assuming the spending patterns for military and civilian personnel across the country hold for San Antonio.

To estimate expenditures for retirees and their beneficiaries, the same methodology was used, except the aforementioned ratios were calculated using data from the BLS table: "Occupation of Reference Person: Shares of Annual Aggregate Expenditures and Sources of Income, Consumer Expenditures Survey, 2006."

Lastly, the spending categories found in the aforementioned tables were assigned to 3-digit NAICS codes. Because of a lack of data on spending on housing, data from the American Housing Survey published by the U.S. Census Bureau were used to apportion the spending on housing to NAICS codes.

Leakage

The main sources of leakage are spending at the military exchanges and the commissary, spending outside of San Antonio, and subsidized housing. Spending at the military exchanges and commissaries was obtained for Lackland and Randolph. The ratio of military personnel at Lackland and Randolph divided total military exchange and commissary sales at these installations. This ratio was then multiplied by the number of military personnel for the other installations to get an estimate of the spending. These figures were then summed. This spending was then apportioned by 3-digit NAICS code by eligible spending population (reservists, veterans?).

Since Consumer Expenditure Survey used to allocate expenditures retirees is based on all consumers, adjustments to spending were made to account for the fact that retirees buying goods at military exchanges and commissaries saved about 33% (see GAO report in footnote 3). This savings is not available to those who are ineligible to use these facilities and would not be captured in the CES data. Thus, these savings were reallocated back into income elastic (?) expenditure categories.

For consumer expenditures, distribution and production costs were derived from the Underlying Assumptions to the Input-Output Commodity Composition of Final Uses in which NIPA line (equivalent to sub sectors) must be bridged to commodity codes to determine appropriate margins for detailed NAICS industries. Likewise, distribution and production costs for retail under military contracts were calculated using data on defense spending on investment and consumption goods expenditures available through the RIMS subscription.

Once consumer expenditures (purchased at retail outlets) were split into their distribution and production costs, it was assumed that the distribution (i.e., retail) component was captured in

San Antonio and all of the production costs, except those related to the production of petroleum related products and some food, were considered leakage. Retail was 100% captured.

In order to estimate leakage, Gini coefficients for the U.S. were obtained from research conducted by J. Bradford Jensen and Lori G. Kletzer.[5] Jensen and Kletzer estimated the Gini coefficients – a measure of the geographic concentration of an industry – for industries within the U.S. and separated them "into three roughly equal groups: Gini class 1 (least geographically concentrated) when the industry Gini was less than 0.1; Gini class 2 when the industry Gini was between .1 and .3; Gini class 3 (most geographically concentrated) when the Gini coefficient was greater than or equal to .3" (p. 9).

Using data obtained from the U.S. Bureau of Labor Statistics Quarterly Census of Employment and Wages, basic employment[6] by industry[7] in all metropolitan statistical areas. Basic employment in these industries in San Antonio was compared to the metropolitan areas to see if the basic employment in San Antonio ranked with the basic employment in the top 27% by industry across the metropolitan areas. The top 27% was used as the threshold because the research by Jensen and Kletzer showed that 27% of the industries were in Gini class 3 – the most concentrated. Since basic employment in San Antonio was not as high in any of the industries, we assumed San Antonio was not in Gini class 3. Thus, it was assumed San Antonio was in class 2.

Having determined that San Antonio industries were not in Gini class 3, we used the Gini coefficients for class 3 as estimates of the amount of leakage in spending across these industries. For example, if the national Gini coefficient for finance and insurance is 16.97, we assumed that 16.97% of the spending on finance and insurance services in San Antonio was leakage. However, it was assumed that all retail was captured in San Antonio.

Multipliers

Where appropriate, multipliers for the San Antonio metropolitan area were applied. The RIMS II multipliers provided by BEA were used. Application of these multipliers requires that the data be adjusted from purchaser prices to producer prices.

Results

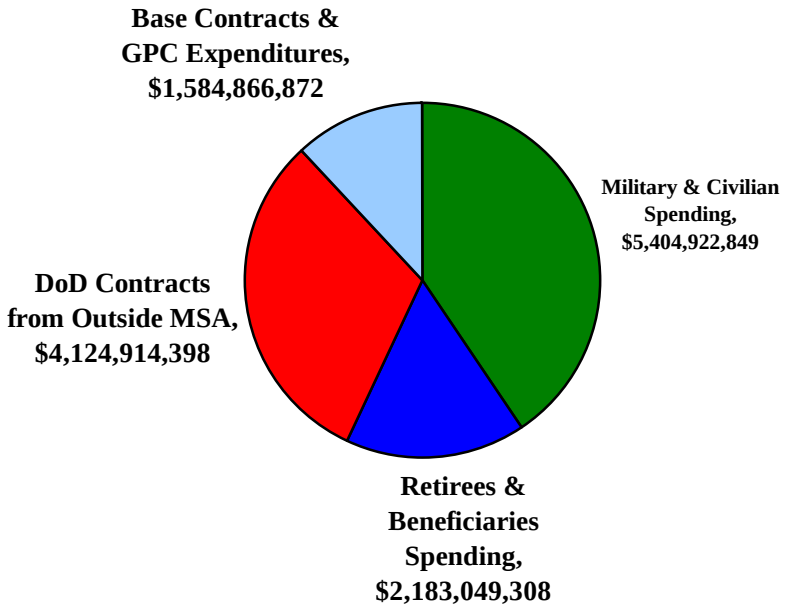
This study measures the economic impact of DoD activities in the San Antonio metropolitan area. The study extends the impact beyond just the impact of the military installations to include the impact of DoD contracts awarded to private sector companies in San Antonio as well as the impact of the activities of military retirees and their beneficiaries. An estimate of the economic impact of BRAC is also calculated.

[5] J. Bradford Jensen and Lori G. Kletzer, "Tradable Services: Understanding the Scope and Impact of Services Outsourcing," Institute for International Economics Working Paper Number WP 05-9, September 2005.
[6] Basic employment is employment in excess of that necessary to serve the local population.
[7] Industries included were agriculture, mining, utilities, manufacturing, wholesale trade, transportation/warehousing, information, finance and insurance, professional, scientific, and technical services, other services, and public administration.

Economic (Output) Impact

In 2006, DoD activities in San Antonio registered an economic impact of $13,297,753,428. The breakdown of this activity is shown in Chart 1.

Chart 1: Economic Impact by Activity



As can be seen in the table, contracting activity, which includes spending by the military installations as well as economic activity generated by private sector companies receiving DoD contracts, accounts for the largest impact. Spending by civilian and military personnel accounts for the second largest impact.

Retirees and beneficiaries of the Survivor Benefit Plans also register a sizeable impact. More will be said on this impact in a subsequent section.

Of course, since much of this money is injected into the local economy from outside of San Antonio, indirect and induced multiplier impacts are include in the aforementioned numbers. This means that the impact from this DoD activity ripples into many other sectors of the economy. The following graph displays the impact of various sectors within the San Antonio economy. As shown in Chart 2, the sectors of the economy most impacted by the DoD were manufacturing, real estate, health care, retail, professional services, finance, and construction.

Chart 2

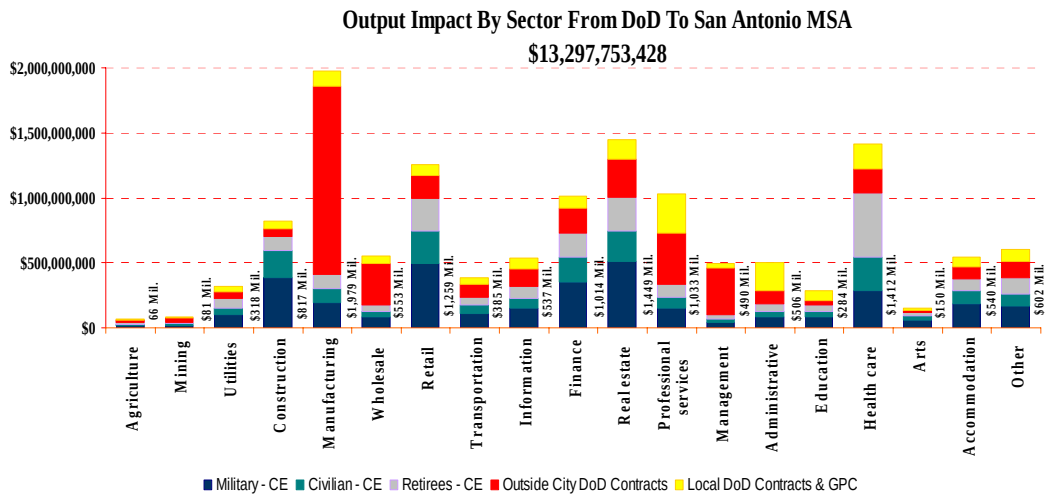
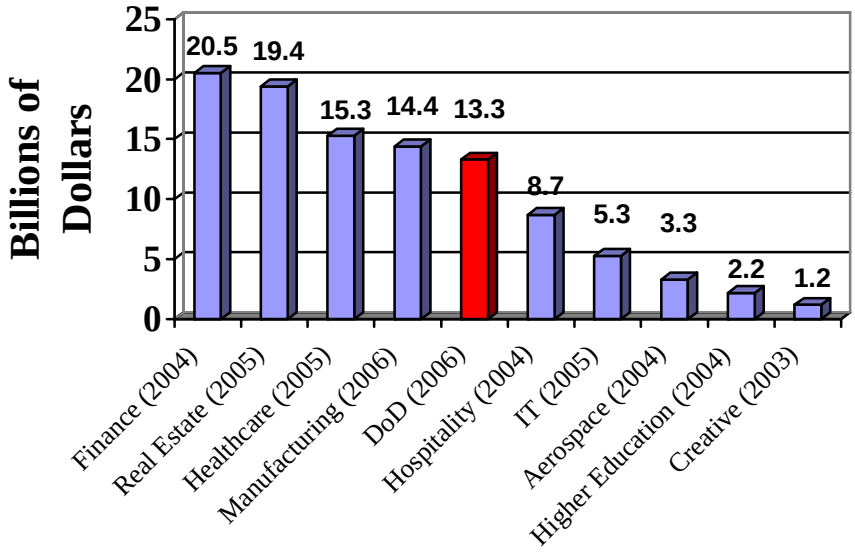


Chart 3 compares the impact of the DoD to other industries and sectors in San Antonio. While the DoD is not technically an industry, it is interesting to make the comparison. One has to keep in mind that the impact numbers shown in this chart are derived from different methods and not all contain multiplier impacts. Furthermore, the impacts are for different time periods across the industries. With those caveats, it is interesting to note that the DoD registers the fourth largest impact of those industries measured.

Chart 3: Economic Impact by Industry/Sector



Employment Impact

DoD activities within the San Antonio metropolitan area support employment of 195,075 people, including direct, indirect, and induced employment. Employment at the local installations is estimated to be 68,659 with 24,404 civilians employed and 44,255 military personnel employed at the installations. DoD contract and purchase card activity supports an additional employment of 44,423, and the spending of the military retirees and their beneficiaries supports employment of 26,809. These impacts are summarized in Chart 4.

Chart 4: Employment by Category

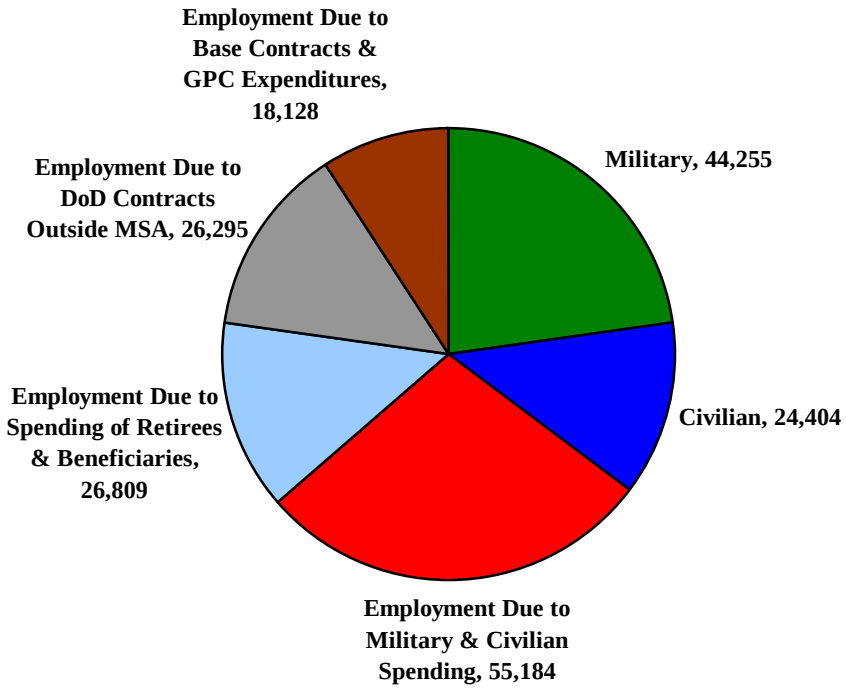


Chart 5 and Table 1 compare the employment supported by the DoD activities in San Antonio to other industries and sectors. The same caveats apply here as were discussed with respect to the similar chart for economic impact by industry. Clearly, the flow of DoD spending into San Antonio supports the largest amount of employment of those industries for which impacts have been measured. The direct employment at the installations alone is quite substantial in and of itself, but when employment of private defense contractors and the multiplier effects are taken consideration, the employment impact is quite large. In fact, according to the Bureau of Labor Statistics[8], total nonfarm employment in San Antonio in 2006 was about 811,300, which means the economic activities of the DoD supported about 24% of the employment in San Antonio in 2006.

[8] Data on total nonfarm employment in San Antonio can be found at the following link: http://data.bls.gov/PDQ/servlet/SurveyOutputServlet;jsessionid=f030949a4556$2D$5D$1.

Chart 5: Employment by Industry/Sector

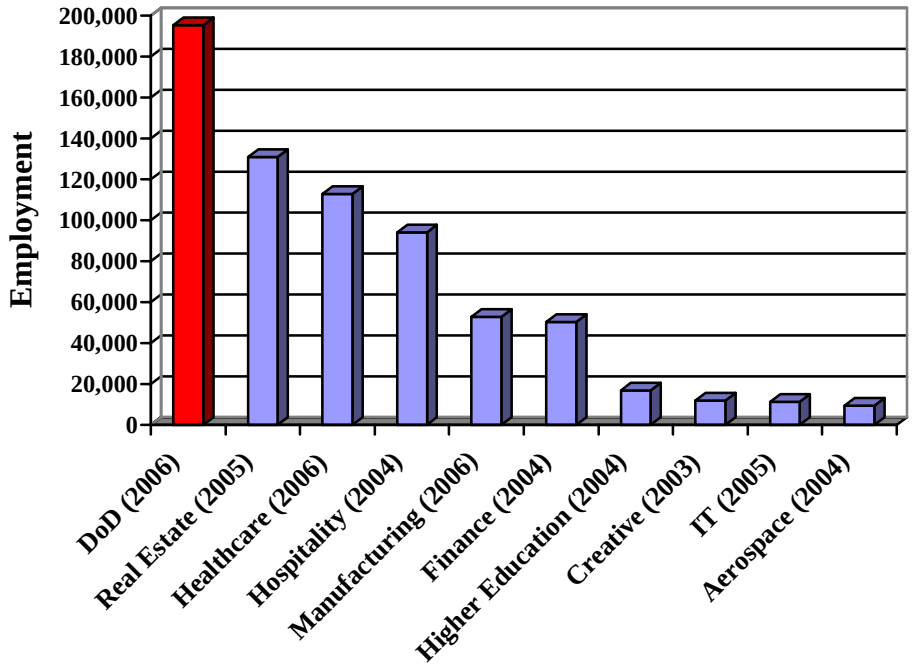


Table 1: Employment by Industry/Sector	
Industry	Employment
DoD (2006)	195,075
Real Estate (2005)	131,000
Healthcare (2006)	112,762
Hospitality (2004)	93,999
Manufacturing (2006)	52,786
Finance (2004)	50,469
Higher Education (2004)	17,134
Creative (2003)	11,888
IT (2005)	11,283
Aerospace (2004)	9,535

Earnings Impact

The employment of 195,075 earned an estimated $9,417,246,605 in 2006. The military installations alone generated earnings of approximately $3,968,463,717 with earnings to military personnel of $2,599,090,372 and civilian personnel of $1,369,373,345. Additionally, the spending of these personnel supported earnings of $1,689,531,163 in other industries. Earnings resulting from DoD contracts originating from outside San Antonio (but not issued by one of the local installations) was estiamted to be $1,144,651,536, and earnings due to contracts issued by the local installations and the General Purchase Card expenditures by the installations was about $600,006,342 in 2006. Lastly, direct payments to military retirees and other transfer payments amounted to $1,253,245,460, and the spending of the retirees supported additional earnings of $761,349,387.

Chart 6: Earnings by Activity

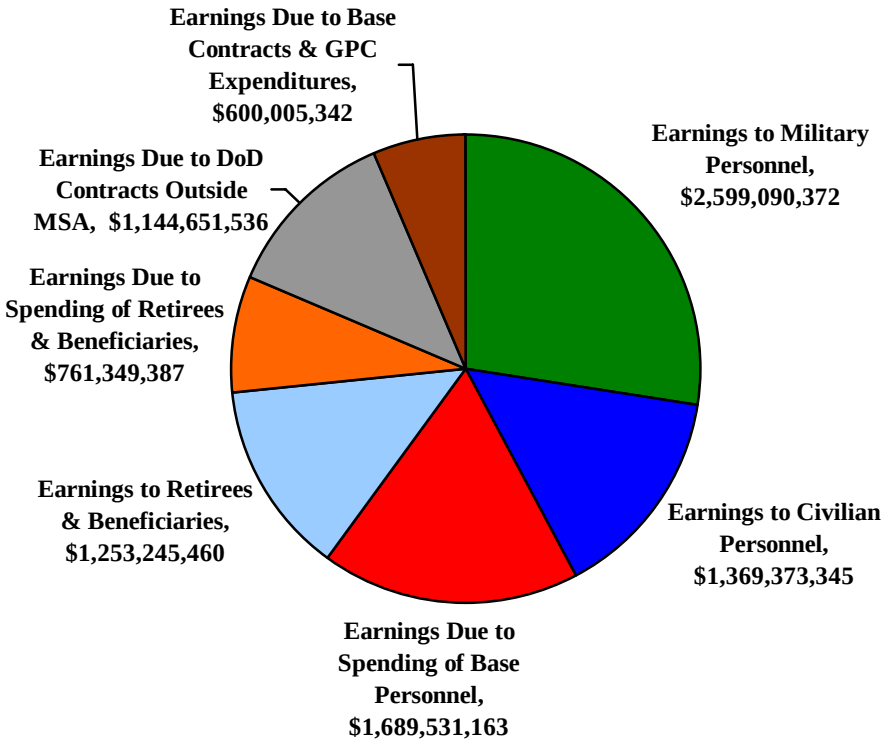
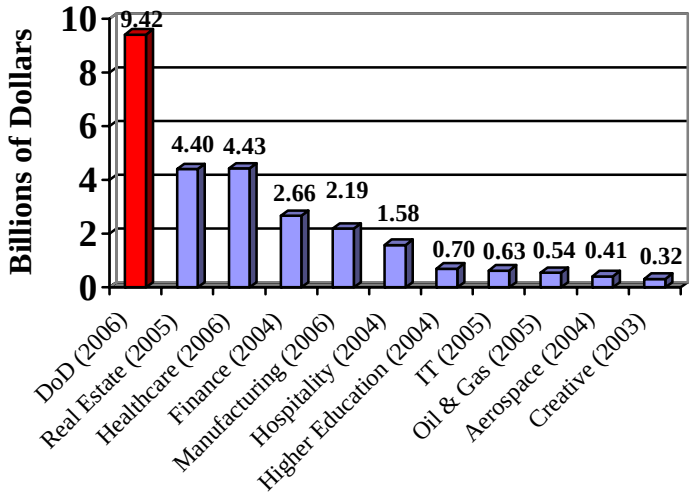


Chart 7 compares to the total earnings resulting from DoD activity to earnings in other industries. DoD-related earnings are more than twice as large as the industry with the next

largest amount of earnings. This may seem odd, but it has to be remembered that there are three components (installation personnel earnings, retiree earnings and other transfer payments, and earnings to government contractors) counted into the DoD earnings number, any one of which would be one of the largest earners by industry on this chart. Additionally, when the multiplier effects are included, the result is as shown in the chart.

Chart 7: Total Earnings by Industry/Sector



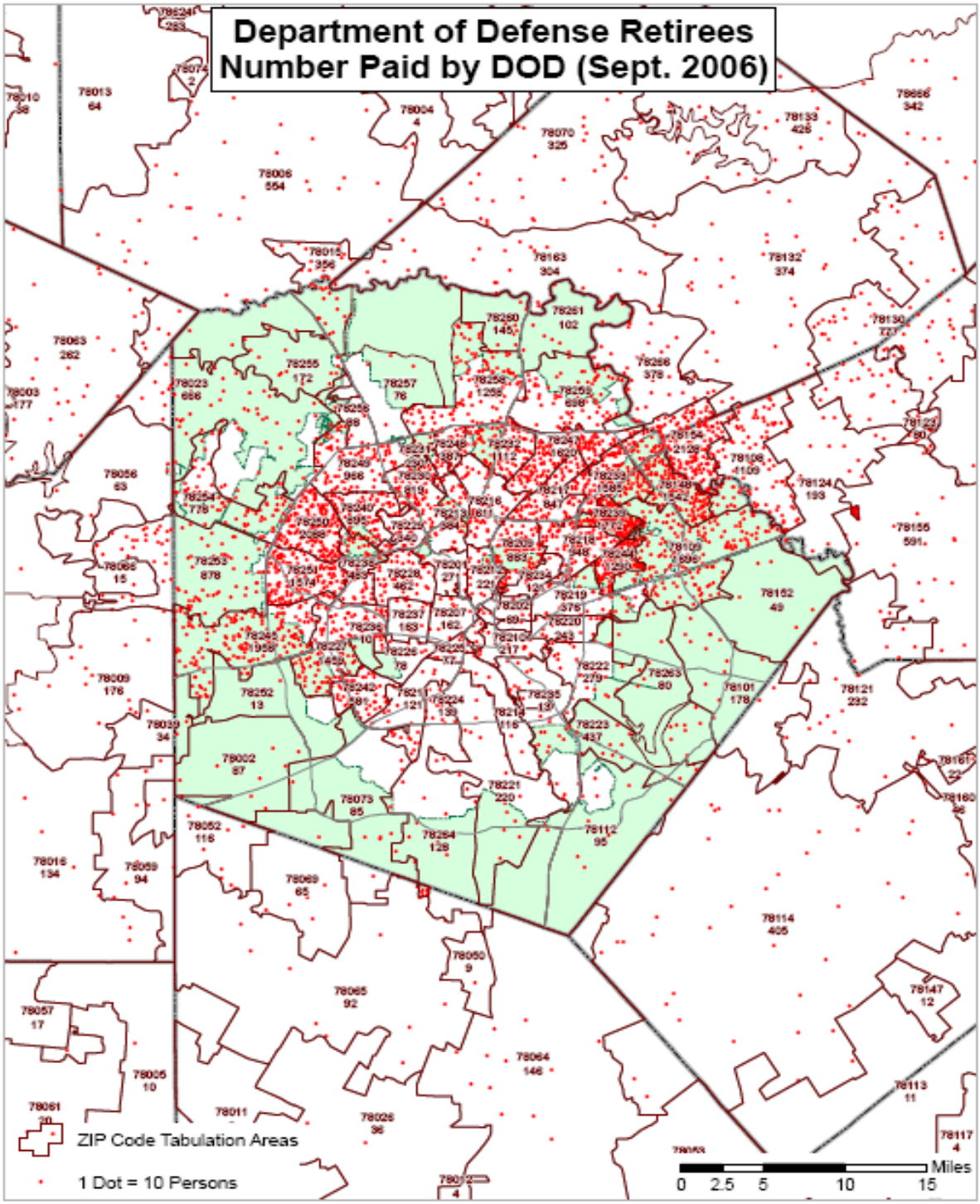
Payments to Military Retirees and Other Transfer Payments

The impact of military retirees and their beneficiaries has been discussed throughout this section, but additional points about this impact are warranted. While we have not had time to conduct an accurate analysis of military retirees across metropolitan areas, we have looked at the data by three-digit zip code provide by the DoD Office of the Actuary. This data indicate that San Antonio may be home to one of the largest populations of military retirees in the country. Data on military retirees was obtained for the San Antonio metropolitan area, which indicates that there were 47,924 military retirees in San Antonio receiving retirement payments from DoD amounting to $1,179,069,780 in 2006.[9] We estimated an additional $74,175,680 in transfer payments[10] from DoD flowing into San Antonio in 2006. The following maps illustrate the geographic distribution of military retirees and payments to this population within San Antonio.[11]

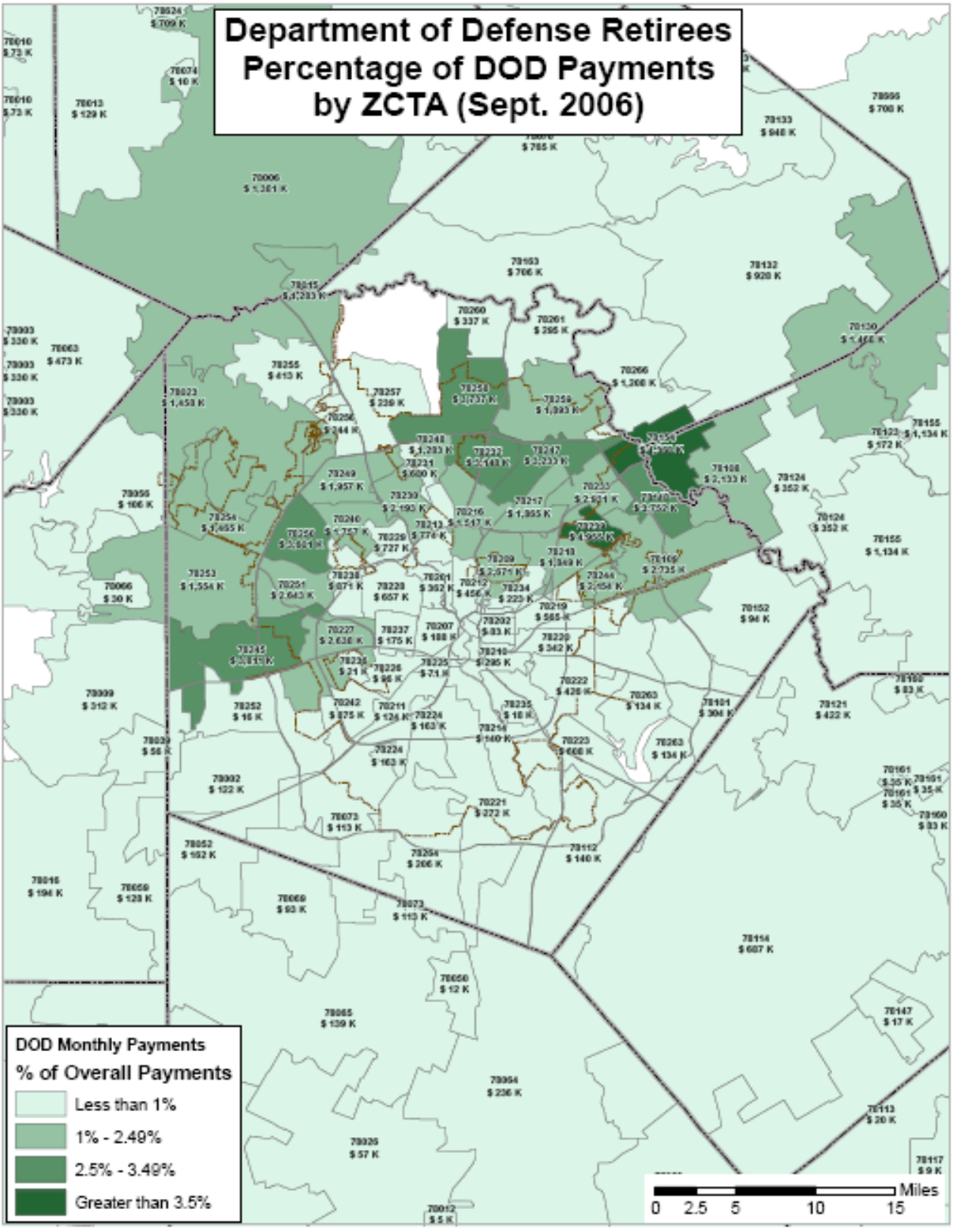
These numbers are quite interesting and warrant further study, as these are dollars flowing into San Antonio even if these recipients were not part of the workforce. However, many of these retired military do hold employment in the San Antonio, so our economy benefits not only from these additional payments but also from their productivity. As previously noted, the impact of the payments to military retirees and other recipients of DoD-related transfer payments would make for a sizeable "industry" by itself in San Antonio.

[9] Source: Pendulum Management compiled these numbers using data from the DoD Office of the Actuary.
[10] Other transfer payments include survivor benefits payments, life insurance payments, readjustment benefits, and other assistance to veterans.
[11] Source: Pendulum Management

Map 1


Department of Defense Retirees
Number Paid by DOD (Sept. 2006)
ZIP Code Tabulation Areas
1 Dot = 10 Persons
Miles
0 2.5 5 10 15

Map 2


Department of Defense Retirees
Percentage of DOD Payments
by ZCTA (Sept. 2006)
DOD Monthly Payments
% of Overall Payments
Less than 1%
1% - 2.49%
2.5% - 3.49%
Greater than 3.5%
Miles
0 2.5 5 10 15

Economic Impact of BRAC

The Base Realignment and Closure (BRAC) activities that are scheduled to occur in San Antonio by September 2011 could arguably be one of the largest economic development projects the city has ever seen. San Antonio is expected to receive 4,886 new personnel and their families, 9,000 additional students per year, and $2.1 billion in construction of military facilities as San Antonio becomes the home of military medicine. By comparison, Toyota and its suppliers invested $1.1 billion in new manufacturing facilities and created 4,100 new jobs.

The estimated impacts of BRAC through 2011 are shown Table 2. The projected economic impact of BRAC through 2011 is $5,652,821,961. As indicated, most of this impact will result from the construction that is scheduled to occur. However, new personnel spending will yield an impact of about $488,658,075, and the impact from the new operations is estimated to be $132,505,886 once they begin. The impact from the 9,000 students that will flow through San Antonio annually are not captured in these estimates but will surely add to the economic impact.

Employment due to the new operations is anticipated to increase by another 4,886 direct jobs, and the spending of these new personnel will support an additional 4,853 jobs. Additionally, the spending from the new operations will support another 1,363 jobs. The employment supported resulting from the construction through 2011 is estimated to be 46,339. It is worth noting that this does not mean that 46,339 new jobs will be created from the construction activity, but rather, the activity will support this number of full-time equivalent positions over the period of the construction. For example, a construction worker may work on the job each year from the beginning, which would be captured in this estimate, but we would not count the fact the he or she works on the site in 2008 and 2009, say, as two new jobs. Furthermore, this estimate includes multiplier effects, so this is not just the direct employment resulting from the construction activity.

Earnings will increase by $2,174,628,569. New operations will increase earnings by $45,098,471. Earnings to new personnel is expected to be $324,876,979 and their spending will generate additional earnings of $148,289,119. With earnings of $1,656,364,000, the construction activity will generate the bulk of the earnings through 2011.

Table 2: Economic Impact of BRAC Through 2011	
Economic Impact	$5,652,821,961
New Personnel Spending	$488,658,075
Construction	$5,031,658,000
Operations	$132,505,886
Employment Impact	57,411
New Personnel	4,886
New Personnel Spending	4,853
Construction	46,339
Operations	1,363
Earnings Impact	$2,174,628,569
New Personnel	$324,876,979
New Personnel Spending	$148,289,119
Construction	$1,656,364,000
Operations	$45,098,471

Conclusion

The past estimates of the economic impact of the military on the San Antonio have focused just on the impact of the activities at the local military installations. These estimates indicated an impact of over 5 billion. This study was able to not only capture the impact of the local military installations but also the impact of local defense contractors and military retirees and beneficiaries in San Antonio. This provided for a more complete picture of the impact of the U.S. Department of Defense activites in San Antonio, which indicates a much larger impact at $13.3 billion. Furthermore, the economic activities of the DoD in San Antonio yields the additional benefit of providing diversity and stability to the local economy, as well as a rich source of highly skilled labor. It is also worth noting that the military in San Antonio provides many other benefits to the local community beyond the economic, such as the world class medical care provided by the military health care facilties to many San Antonio citizens. While the contribution to economic stability and other latter impacts were not measured in this study, they are still very important impacts. The overall result is that the activities of the DoD in San Antonio are a vital component of the local economy and community.